TECHNICAL MANUAL

MANUAL TITLE	MANUAL NO.	MANUAL ISSUE	PAGE
Radioactive Waste Procedures	**MD-10167**	**20**	**1 of 12**
OPERATION TITLE	**OP. NO.**	**OP. ISSUE**	**USE CATEGORY**
Loading/Sealing Radioactive Waste into Metal Drums	**752**	**5**	**C**
TECHNICALLY RESPONSIBLE	**ECN NO.**	**EFF. DATE**	
D. W. Hanahan	**020464MD**	**11-22-02**	

☑ Denotes change
Complete rewrite

USE CATEGORY	
C	This procedure shall be available to workers, though not necessarily at the work location. This procedure may be performed without referring to the procedure; however, the user is still responsible for adhering to the procedure.

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1. PURPOSE

This procedure describes the individual responsibilities, required equipment, material, and documentation requirements for required preparation and sealing of a DOT TYPE A 55-gallon steel drum/liner. This procedure also addresses material control steps associated with performing the work.

2. SCOPE

This procedure applies to all personnel at Miamisburg Closure Project(MCP).

3. POLICY

It is MCP's policy that operators be adequately instructed on all equipment and material they are directed to use. No substitution of original parts or modification of equipment without agreement of the manufacturer is allowed.

IMPORTANT

Each phase of this procedure will be performed with the health and safety of the workers taking priority over the tasks to be accomplished. All workers have stop work authority during any phase of the job evolution. (Reference MD-10286, *Mound Safety and Hygiene Manual*, Operation A-22, "Occupational Safety and Health Rights, Protections, and Obligations.")

4. REFERENCES

- MD-10120, *Configuration Index System*
- MD-10286, *Mound Safety and Hygiene Manual*
- MD-10346, *Procedures for Discrepancy Evaluation / Corrective Action Report System (DECAR)*
- MD-10499, *Waste Management Plan for the Mound Exit Project*
- MD-81020, *Mound Plant Waste Certification Program Plan*
- MD-81240, *Low-Level Radioactive Waste Management Operations*

- SPA930055, *Low-Level Radioactive Waste Prohibited Materials List*
- OPA920003, *Nevada Test Site Waste Acceptance Criteria*
- MD-10038, *Nuclear Criticality Safety*

5. REQUIRED EQUIPMENT, MATERIALS AND DOCUMENTATION

- Approved Waste Stream Acceptable Material List
- Prohibited Materials List
- Configuration Index
- Calibrated scale
- Absorbent, (Florco/PetroSorb) or equivalent
- Damp & Dry Rags
- Form ML-7042X, Low-Level Radioactive Waste Input Form
- ML-9587, Radioactive Material Transfer Tag
- ML-812, Radiological Work Permit (RWP)
- Hammer
- Rubber Gloves and Glove Liners
- Lifting loops (4)
- Loading Fixture
- Black Permanent Marker
- Masking/Vinyl Tape
- Ballpoint Pen, Black Ink
- Leather gloves
- Safety Glasses
- Safety Shoes
- Skids/Pallets
- Calibrated Torque Wrench, 15/16 Socket/Ratchet/Impact
- Yellow 55 Gallon Drums
- Yellow 50 Gallon Liner (Tritium Trash ONLY)
- Yellow Plastic Bag
- RTV

6. INSPECTION PROCEDURE

6.1 Project Superintendent or Project Engineer will:

6.1.1 Request required number of Quality Approved Metal Drums/liners from the designated Waste Coordinator.

6.1.2 Before starting the work assignment, ensure all materials and equipment are available.

6.1.3 Verify that Form ML-7042X Radioactive Waste Input Form is at the job site and ready to be filled out.

6.2 Demolition Technicians will:

6.2.1 Always wear eye, hand, and foot protection; and, practice proper lifting techniques when performing the following procedures.

6.2.2 Remove the bolt, locknut, and bolt ring closure from the 55-gallon drum.

6.2.3 Remove the lid from the 55-gallon drum/liner.

IMPORTANT

Drum gaskets can be either separate from the lid or glued into the lid when received from the manufacturer. The procedure for inspecting the drum lid will vary slightly depending on which configuration is present.

6.2.4 Verify there is a gasket, then remove the gasket and lay it aside for the closure. Alternatively, verify that the gasket is securely glued to the drum lid.

IMPORTANT

If the gasket is missing, notify the responsible person then locate another gasket for closure or a drum lid with an intact and glued gasket.

6.2.5 Complete the container pre-use inspection section of ML-7042X.

6.2.6 Set aside any container of questionable quality (contains holes, significant dents or gouges, etc.) and immediately notify Waste Coordinator. When damaged containers are found, perform Operation 560 of MD-10167.

7. LOADING PROCEDURE

7.1 Prior to loading:

7.1.1 Waste Coordinator will analyze physical and radiological characteristics to verify that waste is suitable for shipment by drum. Radiological Controls POC will provide data necessary for radiological characterization of waste (isotopes and activities).

7.1.2 Waste Coordinator will verify that waste meets waste acceptance criteria for an existing waste stream. Project Engineer or Project Superintendent will provide an acceptable material list for the waste stream prior to loading.

7.2 Personnel will:

7.2.1 Ensure an Acceptable Waste Stream, Acceptable Material List, and a Non-Acceptable Material list is available before starting the Loading Procedure.

7.2.2 Before trash is put into the drum, add approximately two to four inches of absorbent to the drum.

NOTE: If totally dry waste is put into the drum, absorbent is not needed.

7.2.3 Load dry radioactive waste carefully into the 55-gallon drum/liner to prevent damage to the drum/liner and sealing area. Ensure all plastic bags containing radioactive waste are taped shut.

NOTE: **DO NOT** throw or drop the waste into the drum or liner.

7.2.4 When practical, place the lighter packages or items on the bottom of the drum/liner and the heavier items on the top. This is to compress the lighter items for volume reduction. Do not load the drum to the point where it is too top heavy to handle safely.

7.2.5 To keep packages from shifting, pack items tightly when loading.

7.2.6 Block and brace material as required to prevent shifting during shipment.

7.2.7 As each waste type is added, fill out Form ML-7042X, Description and Comments Section of the ML-7042X. If additional room is needed, fill out a ML-7042X Waste Container Loading List Continuation page.

7.2.8 Ensure compliance with the Acceptable Materials List for the approved Waste Stream (See Attachment A).

7.2.9 **DO NOT** Load materials that are on the prohibited materials list (SPA9300055) such as:

- Compressed gas cylinders, unless they are vented and the valve is removed or cylinder is verified to be less than 1.5 psig.
- Spray or pressurized cans, unless punctured by an approved method before loading.
- Fine powders, i.e., cement, dust, plaster, or sandblasting residue unless immobilized so that the waste package contains less than 1 weight percent of less than 10 micrometer diameter particles (consistency of flour) or 15 weight percent of less than 200 micrometer-diameter particles (consistency of sugar).
- Chemicals, liquids, oils, or any combination of these items unless they fall under the Acceptable Materials list for the Waste Stream.
- Any type of lead, i.e., bricks, weights, gloves, etc.
- Filters without authorization from the Waste Coordinator.
- Equipment, unless drained of all free liquid. Use absorbent inside of equipment when needed.

- Paint cans must be dry and free of wet paint. If there is only a small amount of paint left in a can, absorbent can be put in the can, then set aside to dry before loading.

IMPORTANT

For non-typical waste, e.g. chemicals, ensure additional, more clearly defined information is included on or with the waste input form to ensure RCRA compliance.

Example: Vanadium Oxide "Plated on Alumina" or Vinyl Chloride/Vinyl Acetate/Vinyl Alcohol "mixture."

If an item or trash to be loaded is questionable, **DO NOT** load the item, set it aside, then notify the Waste Coordinator.

7.2.10 When packaging TRU waste, refer to Operation 800 and Operation 801, MD-10167.

7.2.11 **DO NOT** overload the Authorized Gross Weight. Gross weight for 55-gal drum is 900 lbs. See MD-81240, Operation 101, Table 1, Container Code List for maximum weights allowed in each type of waste container.

7.2.12 **DO NOT** leave drums/liners in an unsecured area or without locks when unattended.

8. CLOSING/SEALING PROCEDURE

8.1 If the drum has a metal liner, Operations Personnel or Demolition Technician will follow steps 8.1.1 through 8.1.6. If there is no metal liner, go directly to step 8.1.7.

8.1.1 Apply a bead of RTV to the bottom lip of the liner lid.

8.1.2 An additional bead of RTV may be applied to the inside lip of the opening in the liner itself.

8.1.3 Position the lid squarely in the liner opening and press it evenly into place, using a rubber mallet to seat the lid if needed.

8.1.4 Assure that the lid is pressed down as evenly as possible around the entire circumference of the opening.

8.1.5 Additional RTV may be placed around the lid if deemed necessary.

8.1.6 Allow the RTV to cure for at least 24 hours prior to sealing the drum lid.

IMPORTANT

Drum gaskets can be either separate from the lid or glued into the lid when received from the manufacturer. The procedure for sealing the drum lid will vary slightly depending on which configuration is present.

8.1.7 The Demolition Technician will:

8.1.8 Place the drum lid upside down on a flat surface and inspect the gasket area.

8.1.9 If there is a gasket glued into place in the lid, apply a small bead of RTV to the entire circumference of the drum gasket.

8.1.10 If there is no gasket in the lid, apply a small bead of RTV to the entire circumference of the drum chime. Then place the gasket on the drum. The longer straight edge of the gasket goes around the side of the drum and the curled lip of the gasket goes over the top of the drum.

8.1.11 Place lid onto drum, being careful to seat gasket around drum chime.

8.1.12 Align bolt closure ring onto drum.

8.1.13 Install the bolt and locking nut into the bolt closure ring. The bolt goes through the unthreaded lug of the closure ring and through the threaded lug, with the locking nut between the two lugs. See Figure 1 below.

8.1.14 Tighten the bolt; tap the ring with a hammer as necessary to seat the closure ring over the lid and the drum bead.

8.1.15 Tighten the bolt to 25 ft-lb. of torque. (Check the torque setting with a calibrated torque wrench.) The gap between the ring ends should not be more than 1 inch. See Figure 1. The ring ends **must not** touch. If the ring ends touch 25 ft-lb. of torque, set the drum aside and contact your Waste Coordinator.

8.1.16 If the gap between the ring ends is more than 1 inch, continue tightening the bolt until the gap is less than 1 inch.

NOTE: The torque applied to the bolt can exceed 25 ft-lb. as long as the ring ends do not touch.

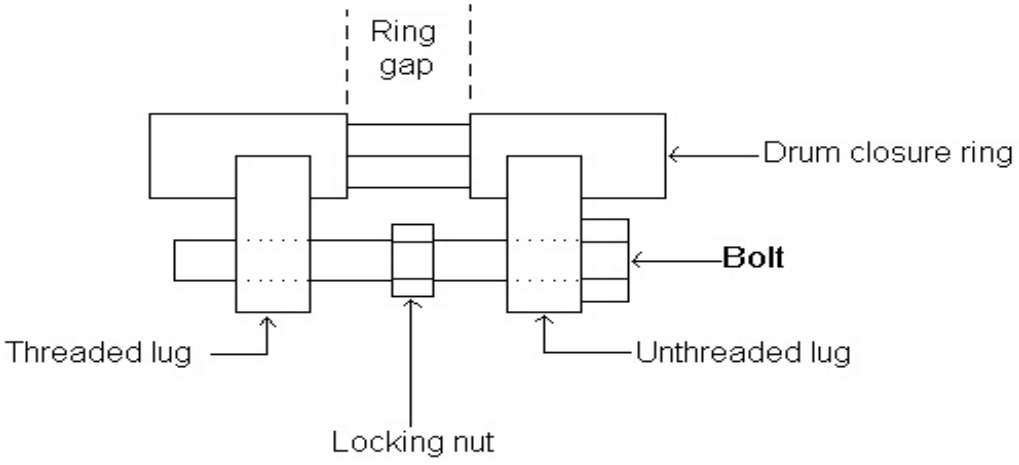

Figure 1 — Installing Bolt and Locking Nut into Bolt Closure Ring

CAUTION

The locking nut must remain loose between the two ring lugs during the above bolt tightening procedure.

8.1.17 After the bolt ring has been tightened, align the holes in bolt parallel to side of drum.

NOTE: Holes must be through the drum ring, threaded side.

8.1.18 Lock the locking nut against either side of drum ring lugs.

8.1.19 Request the Waste Coordinator or designee to install tamper-proof seal in hole closest to bolt ring lug.

9. REOPENING A 55 GALLON DRUM PROCEDURE

9.1 Personnel will:

9.1.1 The RPOC must approve an area for the reopening of the 55-gallon drum. Follow RWP for PPE requirements.

9.1.2 Preparation required for opening the 55-gallon drum may consist of laying floor covering over the area where the reopening will be performed or building a tent.

9.1.3 Generate new paper work for the new containers.

9.1.4 The Waste Coordinator or designee will collect and record the old security seals.

9.1.5 Install new security seals.

9.1.6 When completing this procedure, return the equipment and the material to their proper place.

10. WEIGHING/MARKING

10.1 Personnel will:

10.1.1 Weigh drum on a calibrated scale.

10.1.2 Record weight, scale control number, and weigh date on ML-7042X.

10.1.3 Mark weight with a permanent marker on the top of the drum.

IMPORTANT

The weight must be recorded in kilograms and pounds.

11. SURVEYING

11.1 Personnel will:

11.1.1 Schedule RCT to complete waste container survey and fill out the required information on the Radioactive Material transfer tags in accordance with MD-80043, Operation 400.

11.1.2 Attach the yellow transfer tag to the outside of the container.

12. RECORD KEEPING

12.1 Personnel will:

12.1.1 Complete ML-7042X, Radioactive Waste Input Form using a black ballpoint pen.

12.1.2 Ensure applicable sections are complete.

NOTE: If any corrections are made on Form ML-7042X,

- draw one line through mistake,
- insert correct data in proximity,
- initial, and date change.

12.1.3 Request the Waste Coordinator to review the ML-7042X form, process the form through waste management, update the container information in WIDS and coordinate the transfer of the drum to waste management.